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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,021	11/13/2001	Robert A. Weiss	UCT-0019	1427
23413	7590	12/14/2004	EXAMINER	
CANTOR COLBURN, LLP 55 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002			JOLLEY, KIRSTEN	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/054,021	Applicant(s) WEISS ET AL.	
	Examiner Kirsten C Jolley	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-22 is/are pending in the application.
- 4a) Of the above claim(s) 14-21 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-13 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-7 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

Claims 14-21 are withdrawn from consideration as being directed to non-elected claims. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

#### *Response to Arguments*

1. The objection to the specification over new matter has been withdrawn in response to Applicant's arguments in the after-final response stating that antecedent basis for the amendment is found in claim 9 as originally filed.
2. The 35 USC 112, 1<sup>st</sup> paragraph rejection of claims 8-13 over the inclusion of new matter has been withdrawn in response to Applicants' amendments to claim 8.
3. The 35 USC 102(b) rejections of claims 1-3 and 6-7 have been withdrawn in response to Applicant's amendment to claim 1 requiring that a halogen catalyst instead of a broad oxidative catalyst.
4. With regard to the 35 USC 103(a) rejection of claims 1-3 and 6-7 anticipated by Applicant over the references of Weiss et al. (Y. Fu, D. Palo, C. Erkey, and R. Weiss "Synthesis of Conductive Polypyrrole/Polyurethane Foams via a Supercritical Fluid Process") taken in view of Bessette et al. (Y. Fu, R. Weiss, and M. Bessette "Conductive Elastomeric Foams Prepared by In Situ Vapor Phase Polymerization of Pyrrole and Copolymerization of Pyrrole and N-Methylpyrrole"), Applicant's arguments are convincing and therefore this rejection is not

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applied. Applicant argues that there is no support for the proposition that supercritical carbon dioxide is equivalent to a volatile organic compound such as methanol, or why the use of a catalyst in a volatile organic compound such as methanol is suggestive of the use of that same catalyst in supercritical carbon dioxide. Weiss et al. clearly indicates that inorganic salts such as  $\text{FeCl}_3$  (which is one of the oxidants discussed in Bessette et al.) are insoluble in supercritical carbon dioxide.

5. Applicant's arguments filed November 12, 2004 with respect to the 35 USC 112, 1<sup>st</sup> paragraph rejections of enablement have been fully considered and are persuasive. Applicant argues that use of other vaporous halogens does not require undue experimentation, and that experimentation would not be complex and would be well within the skill of an ordinary practitioner to create a vaporous halogen and substitute it in the procedure set forth in the working examples of the specification. Also, the group of halogens is sufficiently small that it would be within the skilled of an ordinary artisan to substitute one for another. Additionally, because use of "vaporous halogens" appeared in claim 9 as originally filed, it is the Examiner's position that Applicant was in possession of the claimed invention at the time the invention was made.

6. It is noted that the term "vaporous halogen" is interpreted as being limited to halogens that exist only in their vapor phase. By contrast, the phrase "halogen catalyst in a vapor phase" is more broadly interpreted as including the use of a halogen catalyst that is not only vaporous itself, but also a halogen catalyst that is solid or liquid but are contained/carried in a vapor phase of another chemical (such as liquid or solid iodine that is carried in the vaporous phase of supercritical carbon dioxide, for example).

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7. Upon further review of the prior art of record, claims 1-4 and 6-7 are newly rejected over the patent to Bessette et al., cited but not applied in the first Office action. A new double patenting rejection over the Bessette et al. reference is also applied.

### *Specification*

8. The amendment to the specification filed November 12, 2004 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The deletion of "solventless" from page 2, line 3 of the specification constitutes new matter because it attempts to change the meaning of the term "solventless" as it is used in the claims. Page 2 of the specification, as originally filed, defined "a solventless process" as inclusive of a process which uses supercritical carbon dioxide to dissolve an oxidant. Applicant argues that use of the word "solventless" on page 2 of the specification was a typographical error, however because the deletion of the term from page 2 changes the meaning of the term as used in the claims and is new matter because there is nothing to indicate that Applicant envisaged the new meaning of "solventless" argued by Applicant at the time the invention was made. (Additionally, it is noted that the term "solventless" is additionally used in the last line of page 6 of the specification to describe the two embodiments of the invention, one of which includes use of supercritical carbon dioxide, thus further demonstrating that the term "solventless" was intended to include processes including supercritical carbon dioxide at the time the invention was made.)

Applicant is required to cancel the new matter in the reply to this Office Action.

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claim 22 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. New claim 22 appears to be new matter because the specification does not disclose use of a vaporous halogen in the presence of supercritical dioxide. The first embodiment of the specification discloses impregnating a polymer with vaporous iodine alone. The second embodiment of the specification discloses impregnating a polymer with iodine and supercritical carbon dioxide, however the iodine is in the form of a solid powder as described in the Examples -- not vaporous. There does not appear to be a teaching or disclosure that vaporous iodine is used in combination with supercritical carbon dioxide, that the two embodiments could be combined, or that such a combination was envisaged at the time the invention was made.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

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international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 1-4 and 6-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Bessette et al. (US Patent No. 6,156,235).

The applied reference has common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Bessette et al. discloses a method for the manufacture of a conductive polymer composite comprising the steps of: impregnating a polymer foam with an oxidant dissolved in solvent; and exposing the impregnated polymer to a pyrrole vapor to form a conductive polymer composite (col. 3, line 35 to col. 4, line 35). As the solvent, Bessette et al. teaches supercritical carbon dioxide. As the oxidant, Bessette et al. teaches the use of iodide ( $I_2$ ). While Bessette et al. teaches that ion(III)-trifluoromethane sulfonate is preferred as the oxidant for use with supercritical fluid solvents due to its increased solubility, this oxidant is only taught to be a *preferred* embodiment and the reference is not limited to this oxidant, nor does it exclude the use of other oxidants which are taught to be equivalents.

The Examiner acknowledges that the supercritical carbon dioxide dissolves the oxidant in the process of Bessette et al., thus acting like a solvent. However, the term "solventless" appears to be defined on page 2, lines 3-4 (as originally filed) and in the last line of page 6 of Applicant's specification as including supercritical carbon dioxide processes. For this reason, the rejection

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over Bessette et al. is considered a solventless process, according to the definition in Applicant's specification. Also, because supercritical fluids are known to have properties of both vapor and gas, and the iodide oxidant is dissolved in supercritical CO<sub>2</sub>, the process of Bessette et al. meets the limitation of "a halogen catalyst in a vapor phase."

As to claims 2, Bessette et al. teaches use of pyrrole vapor, and mixtures of pyrrole and N-methyl pyrrole vapors. As to claims 6-7, Bessette et al. teaches use of polyurethane foam. As to claim 3, while Bessette et al. does not state the conductivities of the formed composite, it is the Examiner's position that the conductive polymer composite made using iodide in combination with supercritical carbon dioxide in the method of Bessette et al. would necessarily fall within the claimed conductivity range since the method of Bessette et al. uses similar materials and process steps as those disclosed in the instant specification.

### ***Double Patenting***

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 1-4 and 6-7 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent No. 6,156,235 in view of



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Bessette et al.'s publication (Y. Fu, R. Weiss, and M. Bessette "Conductive Elastomeric Foams Prepared by In Situ Vapor Phase Polymerization of Pyrrole and Copolymerization of Pyrrole and N-Methylpyrrole"). The claims of U.S. Patent No. 6,156,235 lack the use of a halogen catalyst, and more specifically iodine. It is noted that the publication to Bessette et al. discloses that  $I_2$  is an equivalent oxidant to  $FeCl_3$  for in situ vapor phase polymerization of pyrrole (see Results section); iron(III) chloride is a claimed oxidant in U.S. Patent No. 6,156,235. Additionally, supercritical carbon dioxide is disclosed as a solvent in the claims of U.S. Patent No. 6,156,235 (and also as an equivalent to methanol); methanol is taught as the solvent in Bessette et al.'s publication. Therefore, it is the Examiner's position that it would have been obvious for one having ordinary skill in the art to have used  $I_2$  as the oxidant in the claimed method of U.S. Patent No. 6,156,235 with the expectation of equivalent and successful results because Bessette et al.'s publication discloses that  $I_2$  is an equivalent oxidant to  $FeCl_3$  (which is a claimed oxidant), and because the solvent that is used in Bessette et al.'s publication - methanol - is an equivalent to supercritical carbon dioxide in the claims of U.S. Patent No. 6,156,235. While the instant claims are directed to a "solventless" process, it is noted that the term "solventless" appears to be defined on page 2, lines 3-4 (as originally filed) and in the last line of page 6 of Applicant's specification as including supercritical carbon dioxide processes. Because supercritical fluids are known to have properties of both vapor and gas, an  $I_2$  oxidant dissolved in supercritical  $CO_2$  would meet the limitation of "a halogen catalyst in a vapor phase."

*Allowable Subject Matter*

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15. Claims 8-13 are allowed. The prior art does not teach or fairly suggest a method for the manufacture of a conductive polymer composite comprising: impregnating a polymer with a *vaporous halogen* in the absence of a volatile organic compound; and exposing the impregnated polymer to a pyrrole-containing monomer vapor to form a conductive polymer composite.

### *Conclusion*

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C Jolley whose telephone number is 571-272-1421. The examiner can normally be reached on Monday to Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on 571-272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kirsten C Jolley  
Primary Examiner  
Art Unit 1762

kcj